

SPECULUM ANNI:

O R,

A Glasse in which you may behold
the revolution of the yeare of our Lord
God MDCXLVIII.

Being the *Bissextile* or *Leap-yeare*.

Shewing all the notable Aspects of the
Planets with the Moon, as also among them-
selves, with the Eclipses, and other notable
Conjunctions, which are to be seen in the Heavens,
this present yeare, 1648. Also other Tables
Astronomicall exactly calculated
for the same yeare.

Rectified especially for the Longitude
and Latitude of the most famous and renown-
ed City of *London*, and may indifferently
serve for the whole Kingdome of *England*,
without any notable difference.

By WILL. LEYBOURN,

Non videnda invenienda posuit Deus.

LONDON,

Printed by S. I for the Company of Stationers.

**The Common notes and moveable Feasts for
this year of our Lord, 1648.**

English account.			Forraign account.
	15	The Golden Number.	15
	5	The Circle of the Sunno.	5
	15	The Epact.	5
	1	The Roman Indiction.	1
	133	The Dominicall Letters.	ED
February	13	The first Sunday in Lent.	February
April	3	Easter day.	April
May	11	Ascension day.	May
May	21	Whitsunday.	May
May	28	Trinity Sunday.	June
26.		Sunday after Trinity.	26

**When the Planets begin to bee both Orientall
and Occidentall this year 1648.**

☿ Is Occidentall till the 15 of May, at which time he be-
neth to be Orientall; and so continueth till the 23 of No-
vember; at which time, he is again Occidentall; and so co-
tinueth the remainder of the year.

♂ Is Orientall till the 12 of February, & from thence Oc-
cidentall till the 1 of Septemb. at which time he beginneth
to be Orientall, and so continueth to the yeares end.

♂ Beginneth to be Orientall on the 18 of January, and so
continueth Orientall the whole year.

♂ This bright Planet is Orientall from the 22 of Novem-
1647, till the 4 of Septemb. this year, at which time she be-
gins to be Occidentall, remaining so the end of the year.

♂ Is Orientall till the 4 of March, and from thence Occi-
dentall till the 19 of April, at which time he begins to be Ori-
entall, and so continues till the 18 of June, being from thence
Occidentall till the 25 of Aug. and from thence Orientall
to the 7 of October, at which time he begins again to be Oc-
cidentall; and so continues to the 10 of December.

You are to understand, that all the time a Planet is Occidentall, it may
be seen after Sun set, because the Planet setteth after the Sun, and all the
while they are Orientall, they may be seen before Sun rise, because the Pla-
nets rise before the Sun, &c.

The Anatomy of mans body, as the parts thereof are attributed to the twelve Signs of the Zodiack.

♈ Aries, Head and face.

♉ Taurus,
Necke and
throat.
♊ Cancer,
Brest, Stomack,
and ribs.
♋ Virgo,
Bowels and
Belly.
♌ Scorpio,
Secret members
♍ Capricorn,
The knees,



♎ Gemini,
Armes and
Shoulders.
♏ Leo,
Heart and
back.
♐ Libra,
Reines and
Loynes.
♑ Sagittarius,
The Thighes
♒ Aquarius,
The Legges.

♓ Pisces, The feet.

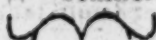
The Characters of the seven Planets.

♄ Saturne, ♃ Jupiter, ♂ Mars, ☉ Sol, ♀ Venus,
☿ Mercury, ☾ Luna.

The Characters of the five Aspects.

{ Conjunction. } { Opposition. }
{ Quartile. } { Trine. }

★ Sextile.



The severall Columnes in each moneth explained

1. The first Columne sheweth the the dayes of the moneth by which is knowne how many dayes each moneth containeth.
2. The second containeth the dayes of the week, is being Dominicall Letter till the 24. of February, and from thence to the yeares end.
3. The third containeth the fixed and moveable Feasts in use; together with the Planets entrance into every Signe, and when they be direct and retrograde.
4. The fourth sheweth the Signe and degree in which the Moon is in every day at noon.
5. The fifth sheweth the Moons age, and is to be used with the Tide-Table following.
6. The sixth, sheweth the houre and minute of the Sun rising at London: exactly calculated for this present year 1648, by which may be knowne the houre and minute of setting, the length of the day and night.
7. The seventh containeth the Lunare Aspects, or the Aspects of the Moon with the Planets.

The eighth and ninth shew the dayes of the moneth, and the dayes of the week, according to the beyond-sea accompt, which differeth 10 dayes from ours, is being Dominicall Letter till the 24 of their February, and from thence to the yeares end.

In the 6 Columne of each Page is placed the houre and min. of \odot rising at London, which doubled is the length of the night, and if you substract the houres and minutes of \odot rise from 12 houres, the remainder is \odot set: and if you double the houres and minutes of \odot set, the summe thereof is the length of the day.

EXAMPLE,

On the 9. of May the \odot riseth at 4 of the clock and 11 min. this number doubled, giveth 8 houres 22 min for the length of the night; and being substracted from 12 houres, leaveth 7 hours 49 m. for the time of \odot set; and this number doubled, giveth 15 houres, 38 min. for the length of the day.

January hath xxxi dayes.

1st Quarter the 7 day, 52 min. past 4 in the morning.
 New Moon the 14 day, 24 min. past 6 at night.
 2nd Quarter the 22 day, 50 min. past 10 at night.
 Full Moon the 30. day. 75 min before 1. in the morning.

Feasts	New year day	Leo	4	17	8	2	△ ♀ C. 11. p	11	D
into cr	C Perig.		18	18	8	0	□ ♀ C. 11. p	12	
which		Virgo	1	19	7	58	♂ ♀ C. 9. p	13	f
used			18	20	7	57	△ ♀ C. 12. p	14	g
	Twelveday.	Libra	2	21	7	56	□ ♀ C. 7. p	15	a
			17	22	7	55		16	b
	Direct.	Scorpio	23	7	54		□ ♂ C. 11. a	17	c
			14	24	7	53		18	d
	1 sund. aft. Ep.		27	25	7	52	* ♂ C. 8. p	19	e
	⊙ in	Sagitt.	11	26	7	50	♂ ♀ C. 10. p	20	f
			23	27	7	49		21	g
		Cyric.	6	28	7	47	♂ ♀ C. 4. p	22	a
	Hilary.		19	29	7	46		23	b
		Aqua.	30	7	45		♂ ♂ C. 9. p	24	c
			13	1	7	44		25	d
	2 sun. aft. Epi.		25	2	7	42	* ♀ C. 2. a	26	e
		Pisces	7	3	7	41	♂ ♀ C. 1. p	27	f
			19	4	7	39	□ ♀ C. 7. p	28	g
	3 Greatest di-	Aries	5	7	38			29	a
	stance fr. ⊙		13	6	7	36	* ♂ C. 6. a	30	b
			25	7	7	35	△ ♀ C. 1. p	31	c
		Taur.	7	8	7	32	□ ♂ C. 10. p		
	4 sun. aft. Epi.		19	9	7	31	♂ ♀ C. 11. p	2	e
	Termine begun.	Gem.	2	10	7	30	□ ♀ C. 9. p	3	f
			15	11	7	28	△ ♂ C. 10. a	4	g
	Fast.		29	12	7	26	♂ ♀ C. 2. p	5	a
		Canc.	13	13	7	25		6	b
			27	14	7	23	♂ ♀ C. 8. a	7	c
		Leo	12	15	7	20	♂ ♂ C. 9. p	8	d
	Septuagisme.		27	16	7	18	△ ♀ C. 11. p	9	e
		Virgo	12	17	7	16		10	f

February hath XIX. dayes.

Last Quarter the 5 day, 28 min. past 3 afternoon.

New moon the 13 day, 53 min. past 12 at noon.

First quarter the 21 day, 46 min. past 2 afternoon.

Full Moon the 28 day, 35 min. past 9 in the morn.

1	D		Virg.	27	18	7	15	△	♂	♂	5 p
2	E	Purification	Libra	11	19	7	14	□	♀	♂	3 a
3	F			27	20	7	13	□	♂	♂	12 p
4	G		Scor.	11	21	7	11	*	♀	♂	9 a
5	A			24	22	7	10	♂	♂	♂	2 p
6		Sexagesime.	Sagitt.	8	23	7	8	□	♂	♂	8 a
7	C			21	24	7	5	*	♂	♂	8 p
8	D		Capr.	3	25	7	4	△	♂	♂	3 p
9	E	☉ in ♋.		16	26	7	1	♂	♀	♂	9 a
10	F			28	27	6	59	△	♂	♂	8 a
11	G		Aqua	10	28	6	57	♂	♂	♂	12 p
12	A	Terme ends.		22	29	6	55	□	♂	♂	8 p
13		Shrove sun.	Pisces	4	30	6	53	♂	♂	♂	2 a
14	C			16	1	5	51	*	♀	♂	8 p
15	D	♂ enters ♋.		28	2	6	48	*	♂	♂	9 a
16	E	Ash Wednes.	Tries	10	3	6	46				
17	F			21	4	6	43	□	♀	♂	2 p
18	G		Taur.	4	5	6	40	*	♂	♂	11 a
19	A			16	6	6	38				
20		1 sun. in Len.		28	7	6	36	♂	♂	♂	8 a
21	C	♀ enters ♋.	Gem.	11	8	9	34	□	♂	♂	1 a
22	D			24	9	6	32				
23	E		Can.	7	10	6	31	*	♂	♂	4 a
24	F	♀ enters ♋.		20	11	6	30	*	♂	♂	9 p
25	G		Leo	5	12	6	18	♂	♀	♂	5 a
26	A			20	13	6	26	□	♂	♂	10 p
27		2 sun. in Len.	Virgo	5	14	6	24	♂	♂	♂	8 p
28	C			21	15	6	22	△	♂	♂	10 p
29	D		Libra	6	16	6	20	△	♀	♂	

March hath xxxi. dayes.

Quarter the 6 day, 19 min. past 4 in the morn.
 moone the 14 day, 40 min. past 6 in the morn.
 quarter the 22 day, 3 min. past 3 in the morn.
 moon the 28 day 16 min. past 6 at night.

David.	Libz.	21	17	6	18		11	g
	Scorp.	6	18	6	16	☐ ♀ ☾ 4 p	12	a
		20	19	6	14	△ ♀ ☾ 3 p	13	b
3 sun. in Lent.	Sagit.	4	20	6	12	♂ ☾ ☾ 1 a	14	c
		17	21	6	10	☐ ♂ ☾ 7 a	15	
	Capr.		22	6	8	△ ♀ ☾ 3 p	16	e
		13	23	6	6	* ♂ ☾ 9 p	17	f
		25	24	6	4	△ ☾ ☾ 5 p	18	g
♂ ♀ ♀	Aqua.	7	25	6	2	* ♀ ☾ 4 a	19	a
		23	26	6	0	♂ ♀ ☾ 8 a	20	b
	Pisces		27	5	58	☐ ☾ ☾ 6 a	21	c
4 sun. in Lent		13	28	5	56		22	
		25	29	5	54	♂ ♂ ☾ 6 a	23	e
	Aries	7	30	5	52		24	f
		19	1	5	50	* ♀ ☾ 9 p	25	g
	Taur.		2	5	48	△ ♀ ☾	26	a
		13	3	5	46		27	b
		25	4	5	44	♂ ☾ ☾ 7 p.	28	c
5 sun. in Len.	Gem.		8	5	43		29	
		20	6	5	41	* ♀ ☾ 11 p	30	e
	Can.	3	7	5	39	☐ ♂ ☾ 2 a	31	f
♂ enters		17	8	5	37			
♂ enters	Leo		9	5	36	* ☾ ☾ 10 a	2	a
♂ enters		14	10	5	35		3	b
Annunt. V.		29	11	5	34	♂ ♀ ☾ 2 p	4	c
Palm Sund.	Virgo	14	12	5	32		5	
Lat. Reg. Cor.		29	13	5	30	♂ ♂ ☾ 6 p	6	e
	Libz.	14	14	5	28		7	f
		29	15	5	26	* ♀ ☾ 1 p	8	g
	Scor.	14	16	5	33	△ ♀ ☾ 5 a	9	a
hefters II		28	17	5	21	♂ ☾ ☾ 3 p	10	b

April hath xxx. dayes.

Last quarter 4 day, 13 min. past 9 at night.

New moon the 12 day, 49 min. past 12 at night.

First quarter the 20 day, 44 min. past 12 at noon.

Full moon the 27 day, 56 min. past 4 in the morning.

1	G		Regit. 12	18	5	19	△	♂	C. 1. a	
2	H	Easter day.		26	19	5	17	△	♂	C. 7. p
3	H		Capric.	9	10	5	14	△	♀	C. 8. p
4	C			21	21	5	12	*	♀	C. 1. a
5	D		Aqua	4	22	5	10	△	♂	C. 6. a
6	E			16	23	5	8	*	♂	C. 1. a
7	F			28	24	5	5	♂	♂	C. 3. p
8	G	Spog.	Pisces	10	25	5	2	*	♀	C. 10 p
9	H	1 sun. aft. East.		22	26	4	1			
10	H	♀ Retrogr.	Bries	3	27	4	59	♂	♀	C. 7. a
11	C			15	28	4	57	♂	♂	C. 10. a
12	D			27	29	4	55	△	♂	C. 4. p
13	E		Taur.	10	1	4	53	♂	♀	C. 7. p
14	F			22	2	4	52	*	♀	C. 12. p
15	G	♂ Direct.	Gaur.	5	3	4	50	♂	♂	C. 6. a
16	H	2 sun aft. East.		17	4	4	48	*	♂	C. 1. p
17	H		Can.	5	5	4	46	□	♀	C. 4. p
18	C			13	6	4	44	*	♀	C. 8. a
19	D	Termes begin		27	7	4	43			
20	E		Leo	10	8	4	42	△	♀	C. 1. a
21	F			24	9	4	40	♂	♂	C. 8. p
22	G		Virgo	9	10	4	39	□	♂	C. 2. a
23	H	3 sun. aft. East.		23	11	4	37			
24	H		Libra	8	12	4	35	♂	♀	C. 3. p
25	C	Mark Evan		23	13	4	33	*	♂	C. 3. p
26	D	Faſt	Scop.	7	14	4	31	♂	♀	C. 10. a
27	E			22	15	4	30	□	♂	C. 12. p
28	F		Regit.	6	16	4	28	♂	♂	C. 7. a
29	G			20	17	4	26	△	♀	C. 3. a
30	H	4 sun. aft. East.	Capric.	4	18	4	24	△	♀	C. 1. p

May hath xxxi. dayes.

last quarter the 4 day 17 min. past 11 before noone.

New Moon the 12 day 53 min. past 12 at Noon.

first quarter the 19 day 28 min. past 5 at night.

full Moone the 26 day 6 min. past 12 at noone.

b Phil. and Ja	Cap.	17	19	4	34	☐ ♀ C. 2. p	11	e	
c ♂ enters ♀		30	20	4	21	△ h. C. 8. p	12	f	
d	Aqua	12	21	4	20		13	g	
e ♀ Direct.		24	22	4	19	♂ ♀ C. 12. p	14	a	
f ♀ enters m	Pisces	6	23	4	17	* ♂ C. 2. a	15	b	
g		18	24	4	14		16	c	
h Rogation sun		30	25	4	13	* h C. 10. p	17	d	
i	Aries	12	26	4	12		18	e	
j		24	27	4	11	♂ ♀ C. 8. p	19	f	
k	Taur.	6	28	4	10	♂ ♀ C. 1. p	20	g	
l Ascent. day.		18	29	4	9	☉ in II.	21	a	
m	Gemin.	30	4	7	8	♂ h C. 8. p	22	b	
n		14	1	4	6		23	c	
o		27	2	4	5	* ♀ C. 7. p	24	d	
p Terme ends	Can.	10	3	4	3		25	e	
q ♀ at greatest		24	4	4	2	* h C. 4. p	26	f	
r distance ☉	Leo	7	5	4	1	☐ ♂ C. 7. p	27	g	
s		21	6	4	0		28	a	
t	Virgo	5	7	3	59	♂ ♀ C. 5. a	29	b	
u		19	8	3	58	△ ♂ C. 1. a	30	c	
v Whit Sunday	Libra	3	9	3	57	△ h C. 5. p	31	d	
w		18	10	3	56		Jun.	e	
x	Scor.	2	11	3	56	* ♀ C. 10. a	2	f	
y		16	12	3	55	♂ ♀ C. 6. p	3	g	
z	Sagit.	13	3	54		☐ ♀ C. 2. p	4	a	
1		15	14	3	54		5	b	
2	☾ Eclips.	28	15	3	53	△ ♀ C. 7. p	6	c	
3	Trin. Sunday	Cap.	12	16	3	52		7	d
4		25	17	3	52	△ ♀ C. 4. p	8	e	
5	Aqua	8	18	3	51		9	f	
6		20	19	3	51	☐ ♂ C. 3. p	10	g	
7	Fast.								

June hath xxx. dayes.

Last quarter the 3 day 23 min. past 4 in the morn.
 New moon the 10 day, 38 min. after midnight.
 First quarter the 17 day, 9 min. past 10 at night.
 Full moon the 24 day, 48 min. past 10 at night.

1	e		Disces	2	20	3	50	♂ ♀ ☾ 1 p
2	f	Term begins		14	21	3	49	
3	g			26	22	3	49	* ♀ ☾ 4 p
4	a	1 fun. est. Tr.	Beles	8	23	3	49	* ♀ ☾ 1 p
5	b	♀ enters II		20	24	3	48	
6	c		Taur.	2	25	3	48	△ ♀ ☾ 3 p
7	d			14	26	3	48	
8	e			27	27	3	47	♂ ☿ ☾ 1 p
9	f		Gem.	9	28	3	47	♂ ☿ ☾ 3 a
10	g	☉ Eclipsed.		22	29	3	47	♂ ☿ ☾ 5 a
11	a	☉ ☿ ☿	Canc.	6	1	3	47	* ♀ ☾ 8 a
12	b			20	2	3	47	
13	c	♂ enters II	Leo	3	3	3	47	* ♀ ☾ 10 p
14	d			18	4	3	47	
15	e	♀ enters ☿	Virgo	2	5	3	48	♂ ♀ ☾ 4 p
16	f			16	6	3	48	☐ ♀ ☾ 7 a
17	g	☾ Perig.	Libra	7	3	48	☐ ♀ ☾ 10 p	
18	a	3 fun. ant. Tr.		14	8	3	49	
19	b			28	9	3	49	* ♀ ☾ 12 p
20	c		Scor.	12	10	3	49	△ ♀ ☾ 10 a
21	d			26	11	3	50	
22	e		Sagi.	10	12	3	50	♂ ♀ ☾ 1 p
23	f			24	13	3	51	♂ ♀ ☾ 9 a
24	g		Capr.	7	14	3	51	△ ♀ ☾ 10 a
25	a	4 fund. ant. Tr.		20	15	4	52	♂ ☿ ☾ 4 p
26	b		Aqua	3	16		53	
27	c			16	17	3	54	△ ♀ ☾ 3 a
28	d			28	18	3	54	
29	e	Peter's Apert.	Disces	10	19	3	55	☐ ♀ ☾ 2 p
30	f	♀ enters ☿		22	20	3	56	

July hath xxxi. dayes.

first quarter the 2 day, 33 min. past 9 at night.
 new moon the 10 day, 35 min. past 10 in the morn.
 first quarter the 17 day, 9 min. past 3 in the morn.
 first quarter the 17 day, 9 min. past 3 in the morn.

11	a	5 sun. aft. Tr.	Bries	4	21	3	57	☐ ♀	D 7 a	11	c
12	b			16	22	3	57	* ♂	8 a	12	d
13	c			28	23	3	58			13	e
14	d		Taur.	10	24	3	59	* ♀	2 a	14	f
15	e			22	25	4	0			15	g
16	f		Gem.	4	26	4	1	☐ ♀	6 p	16	a
17	g			17	27	4	2	♂ ♂	0 p	17	b
18	a		Can.	28	4	3				18	c
19	b	6 sun. aft. Tr.		14	29	4	5	* ♀	2 a	19	d
20	c			28	30	4	6			20	e
21	d		Leo	13	1	4	8	♂ ♀	5 p	21	f
22	e			27	2	4	9	* ♂	1 a	22	g
23	f		Virgo	12	3	4	11	☐ ♀	1 p	23	a
24	g			26	4	4	12	☐ ♀	4 a	24	b
25	a		Libra	11	5	4	13	△ ♀	3 p	25	c
26	b	7 sund. aft. Tr.		25	6	4	14	* ♀	6 p	26	d
27	c		Scor.	9	7	4	15	* ♀	1 p	27	e
28	d	♀ enters 17		23	8	4	16	△ ♀	11 a	28	f
29	e	Dog days beg	Sagitt.	6	9	4	18	☐ ♀	7 p	29	g
30	f			20	1	4	20	♂ ♂	12 p	30	a
31	g		Capri.	3	12	4	21	△ ♀	4 p	31	b
	a			16	13	4	23	△ ♀	3 a		c
	b	8 sun. aft. Tri.		29	13	4	23	♂ ♀	12 a		d
	c		Aqua	11	14	4	27	△ ♀	5 p		e
	d	James Apost		24	15	4	19	△ ♀	12		f
	e	Past.	Pis.	6	16	4	30	♂ ♀	11 p		g
	f			18	17	4	32	☐ ♀	4 a		a
	g		Bries	18	18	4	34	☐ ♀	10 p		b
	a			12	19	4	35	* ♀	4 p		c
	b	9 sun. aft. Tri.		24	20	4	37				d
	c		Taur.	6	21	4	39	* ♂	8 a		e

August hath xxxi. dayes.

Last quarter the 1 day, 11 min. past 2 after noon.
 New moon the 8. day, 3 min. past 7 at night.
 First quarter the 15 day, 48 min. past 9 in the morn.
 Full moon the 23 day, 52 min. past 1 in the morn.
 Last quarter the 31 day, 23 min. past 6 in the morning.

1	c		Taur.	18	22	4	38	△ ♀	C. 9. a
2	d			30	23	4	40		
3	e		Gen.	13	24	4	42	♂ h	C. 4. p
4	f			25	25	4	44		
5	g		Can.	9	26	4	46	♂ ♂	C. 9. a
6	h	rosun. aft. Tri.		22	27	4	48	* ♀	C. 7. a
7	i		Leo	7	28	4	50		
8	j			21	29	4	52	♂ ♀	C. 7. a
9	k		Virg.	6	1	4	54	♂ ♀	C. 5. p
10	l	C Perig.		21	2	4	56	♂ ♀	C. 2. a
11	m		Libra	6	3	4	58	□ ♂	C. 8. p
12	n	♀ Retrog.		21	4	4	59	* ♀	C. 4. p
13	o	○ in A.	Scor.	5	5	5	1	△ ♂	C. 11. p
14	p			20	6	5	3	* ♀	C. 5. a
15	q		Sag.	3	7	5	5		
16	r			17	8	5	6	□ ♀	C. 5. p
17	s			30	9	5	8	△ ♀	C. 11. a
18	t	♀ enters 12	Cap.	13	10	5	10	♂ ♂	C. 4. p
19	u			25	11	5	12		
20	v	12 sun aft. Tr.	Aqua	8	12	5	14		
21	w			20	13	5	16	△ h	C. 3. a
22	x		Pisces	3	14	5	18	♂ ♀	C. 7. p
23	y			15	15	5	20	♂ ♀	C. 6. p
24	z	Bartho. Apost.		27	16	5	22		
25	a		Aries	9	17	5	24	* h	C. 12. p
26	b			20	18	5	26	□ ♂	C. 11. a
27	c	13 sud aft. Tri.	Taur.	2	19	5	28		
28	d			14	10	5	30	△ ♀	C. 9. p
29	e	Dog da. end.		26	21	5	31	* ♂	C. 2. a
30	f	Fast.	Gen.	8	22	5	23	□ ♀	C. 1. a
31	g			21	23	5	35	♂ h	C. 2. a

September hath xxx. dayes.

New moon the 7 day, 7 min. past 3 in the morn.
 First quarter the 13 day, 31 min. past 7 at night.
 Full moone the 21 day, 17 min. past 6 at night.
 Last quarter the 29 day, 1 min. before 7 at night.

ing.

11	f	Can.	3	24	5	37	*	♀	C. 6. p	11	b	
12	g		17	25	5	40	*	♂	C. 5. p	12	c	
13	h	14 sun, aft. Tr.	Leo	26	5	42	♂	♂	C. 1. a	13	d	
14	c	♀ Direct.		15	27	5	44	*	♂	C. 2. p	14	e
15	d			29	28	5	45				15	f
16	e	Virgo	15	29	5	47	♂	♀	C. 1. a	16	g	
17	f	C Perig.		30	30	5	50	♂	♀	C. 5. a	17	a
18	g	Libra	15	1	5	51	△	♂	C. 2. p	18	b	
19	h	Scoz.	2	5	53	□	♂	C. 9. a	19	c		
20	c		15	3	5	56	*	♂	C. 11. p	20	d	
21	d	15 sun aft. Tr.		29	4	5	57	*	♀	C. 2. p	21	e
22	e	♀ enters ♎		3	5	59	♂	♂	C. 6. p	22	f	
23	f	♂ enters ♏	Sagitt.	27	6	6	1	□	♂	C. 4. a	23	g
24	g	☉ in ♎		10	7	6	2	△	♀	C. 11. p	24	a
25	h		Capz.	23	8	6	3				25	b
26	c		Aquar.	5	9	6	4	♂	♂	C. 7. a	26	c
27	d	16 sun aft. Tr.		17	10	6	6	△	♂	C. 10. a	27	d
28	e			29	11	6	8				28	e
29	f	♂ Retrogr.	Pisces	12	12	6	10	□	♂	C. 10. p	29	f
30	g			24	13	6	12	♂	♀	C. 2. p	30	g
31	h	Maub. Apost.	Aries	5	14	6	14	△	♂	C. 6.		
32	c			17	15	6	16	♂	♀	C. 5. a	2	b
33	d			29	16	6	18				3	c
34	e	17 sun aft. Tr.	Taur.	11	17	6	20	□	♂	C. 3. a	4	d
35	f			23	18	6	22	△	♂	C. 3. p	5	e
36	g		Gem.	5	19	6	24	*	♂	C. 6. p	6	f
37	h	Fast.		17	20	6	26	♂	♂	C. 10. a	7	g
38	c			30	21	6	28	□	♂	C. 3. a	8	a
39	d	Mich. Arch.	Canc.	13	22	6	30	□	♀	C. 7. a	9	b
40	e			26	23	6	32	□	♀	C. 9. a	10	c

October hath xxi. dayes.

New moon the 6 day, 40 min. past 11 before noon.
 First quarter the 13 day, 46 min. past 8 in the morn.
 Full moon the 17 day, 11 min. past 12 at noon.
 Last quarter the 29 day, 23 min. past 6 in the morn.

1	a	18 sun. aft. Tr. Leo	9	24	6	35	♂♂	♂	3P	11
2	b			23	25	6	38	*♀	♂	9P
3	c		Virgo	8	26	6	40			13
4	d			23	27	6	42	♂	♂	6P
5	e	♀ enters m.	Lib.	8	28	6	44	*♂	♂	9P
6	f			23	29	6	46	♂	♀	9a
7	g		Scor.	8	1	6	48	♂	♀	2a
8	a	19 sun. aft. Tr.		23	2	6	50	*♂	♂	7P
9	b		Sagit.	8	3	6	52			19
10	c			22	4	6	54	♂	♂	1a
11	d		Capri.	6	5	6	56	*♀	♂	4P
12	e			19	6	6	58			21
13	f	☉ in m.	Aqua	2	7	7	0	♀	♂	5P
14	g			14	8	7	1	♂	♂	8P
15	a	20 sun. aft. Tr.		2	9	7	4			25
16	b		Pisces	9	10	7	6	♂	♂	6a
17	c			21	11	7	8	♂	♀	1a
18	d	Luke Evan.	Aries	2	12	7	10			18
19	e			14	13	7	12	*♂	♂	2P
20	f			26	14	7	14	♂	♂	2a
21	g	♂ enters ♀	Taur.	8	15	7	16	♂	♂	8a
22	a	21 sun. aft. Tr.		20	16	7	18	♂	♀	3P
23	b	Termes begins.	Gem.	2	17	7	19	♂	♂	7P
24	c			14	18	7	21	♂	♂	2P
25	d	Fall.		27	19	7	23	*♂	♂	6a
26	e		Canc.	10	20	7	24	*♂	♂	4a
27	f			22	21	7	26	♂	♀	11P
28	g	Simon & Jude	Leo	6	22	7	28			7
29	a	22 sun. aft. Tr.		19	23	7	30	*♂	♂	4a
30	b		Virgo	3	24	7	31			9
31	c			17	25	7	32	♂	♂	8a

New moon
 First quarter
 Full moon
 Last quarter

11
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November hath xxx. dayes.

New moon the 4 day, 39 min. past 9. at night.
 First quarter the 12 day, 56 min. past 1 in the morn.
 Full moon the 20 day, 23 min. past 6 in the morn.
 Last quarter to 27 day, 58 min. past 3 afternoon.

1	D	All Salary.	Libra	2	267	34	*	♀	♄	5	p	11	g	
2	e	C Perigr.		17	277	36	△	♄	9	a		12	a	
3	f		Scor.	2	287	38	*	♂	♄	7	a	13	b	
4	g			17	297	39						14	c	
5	a	Powd. Tract.	Sagit.	1	1	7	40	*	♄	2	p	15	d	
6	b			16	2	7	42	♂	♄	9	a	16	e	
7	c	♂ enters m	Capr.	3	7	43	□	♄	5	p		17	f	
8	d			14	4	7	45					18	g	
9	e			27	5	7	46	△	♄	1	p	19	a	
10	f		Aqua	10	6	7	48	*	♀	♄	11	p	20	b
11	g			23	7	7	49	*	♀	♄	2	a	21	c
12	a		Pisces	5	8	7	50	♂	♂	♄	7	a	22	d
13	b			17	9	7	52	□	♀	♄	5	p	23	e
14	c			29	10	7	53	♂	♄	10	p	24	f	
15	d		Aries	11	11	7	55	*	♄	5	p	25	g	
16	e	C Apog.		23	12	7	56	△	♀	♄	5	p	26	a
17	f		Taur.	5	13	7	57	△	♂	♄	0		27	b
18	g			17	14	7	58						28	c
19	a	25 sun. afr. Tr.		29	15	7	59	△	♄	12	a	29	d	
20	b		Gem.	11	16	8	0	□	♂	♄	1	a	30	e
21	c	♀ enters ♍		23	17	8	1	♂	♄	7	a			Dece.
22	d	♀ enters ♍.	Can.	7	18	8	2	♂	♀	♄	3	a		
23	e			20	19	8	3						3	a
24	f		Leo	3	20	8	4	*	♄	5	p	4	b	
25	g			16	21	8	5						5	c
26	a	26 sun. afr. Tr.		30	22	8	6	△	♀	♄	11	p	6	e
27	b		Virgo	13	23	8	6	♂	♂	♄	3	a	7	f
28	c	Terme ends.		28	24	8	7						8	g
29	d	Fast.	Libra	12	25	8	8	♂	♄	8	a	9	a	
30	e			26	26	8	9						10	a

December hath xxxi. Dayes

New Moon the 4 day, 21 min. past 9 in the morn.
 First Quarter the 11 day, 13 min. past 10 at night.
 Full Moon the 19 day, 9 min. past 11 at night.
 Last Quarter the 27 day, 37 min. before 1 in the morn.

1	f		Scorp. 11	27	8	9	* ♀	C. 2. p	11	
2	g	☿ Retrog.		25	28	8	10		12	
3	a	☿ Advn. Sun.	Sagi. 10	29	8	11	♂ h	C. 4. p	13	
4	b			24	30	8	12		14	
5	c		Capit. 8	1	8	12	♂ ♀	C. 7. a	15	
6	d			22	2	8	12	♂ ♀	C. 4. a	16
7	e		Aqua. 5	3	8	13	△ ♀	C. 4. p	17	
8	f			18	4	8	13		18	
9	g		Pisces 1	5	8	13	* ♀	C. 10. a	19	
10	a	☿ sun aft. Adv.		13	6	8	13		20	
11	b	☉ in m.		25	7	8	13	□ ♀	C. 4. p	21
12	c		Tries 7	8	8	13	♂ ♀	C. 1. p	22	
13	d			19	9	8	13		23	
14	e		Taur. 10	8	13		□ ♀	C. 6. a	24	
15	f			13	11	8	13	△ ♀	C. 2. p	25
16	g	♀ Enters		25	12	8	13	△ ♀	C. 12. a	26
17	a	☿ sun, aft. Ad.	Gem. 7	13	8	13	♂ h	C. 7. p	27	
18	b			19	14	8	12	♂ ♀	C. 3. p	28
19	c		Canc. 3	15	8	12	□ ♀	C. 11. p	29	
20	d			16	16	8	12	* ♂	C. 11. a	30
21	e	Thomas Apo.		29	17	8	11		31	
22	f		Leo 13	18	8	11	♂ ♀	C. 3. a		
23	g			27	19	8	10	△ ♀	C. 2. a	
24	a	☿ sun, aft. Adv.	Virgo 10	20	8	9	♂ ♂	C. 9. p		
25	b	Christm. day		24	21	8	8	□ ♀	C. 7. a	
26	c	St. Steph.	Libra 9	22	8	7	♂ ♀	C. 1. p		
27	d	Iohn Evan.		23	23	8	6	□ ♀	C. 1. p	
28	e	Janocenta.	Scor. 7	24	8	5				
29	f			21	25	8	5	* ♂	C. 4. a	
30	g		Sagit. 5	26	8	4	♂ h	C. 9. p		
31	a	☿ sun, aft. Adv.		19	27	8	3	♂ h	C. 7. p	

Astronomicall Calculations,

For the Yeare of our Lord God,

M D C XLVIII.

Being the *Bissextile* or *Leap-year*.

In which is contained, a

briefe and plaine Definition of

ASTRONOMY, shewing the

Excellency, Necessity, and

Certainty of that

SCIENCE.

Also a *Chronography* of the foure

Quarters of the Year. A description of the

Eclipses both *Solar* and *Lunar*. A Table of the

Tides and Declination of the Sun. With divers

other remarkable things of like concernment,

and necessary for every man to take notice of.

By WILLIAM LEYBOURN,

*The Heaven's a Book, the Stars are Letters fair,
God is the writer, Men the Readers are.*

L O N D O N,

Printed by R. L. for the Company of
Stationers, 1648.



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A Definition of
ASTRONOMY,
shewing the Excellencie,
Necessity, and Certainty of
that SCIENCE.

ASTRONOMY is an Art which by infalible Demonstrations, teacheth the Distances, Magnitudes, Motions, Apparances, Risings, Settings, Conjunctions, Declinations, Culminations, Eclipses, and other Passions, incident to the Cœlestiall Bodies, as the Sun and Moon, the Planets and Fixed Stars, for any time past, present, and to come; By it we come to know the distinct course of Time and Seasons, as Dayes, Houres, Weekes, Moneths, Yeares, and Ages, the reason of the unequall length and shortnesse of Dayes and Nights, the distinction of Zones,

Calculations Astronomicall,

whether Temperate, Frigid, or Torrid, the Longitude and Latitude of Places, the diversity of Shadows, the Measure of the Earth, and indeed whatsoever is most excellent in human Learning.

This Science, for the Excellencie of it, ought to be preferred before any other earthly contentment: first, because it converseth about heavenly matters, and also doth intreat of things to come (as Eclipses, Conjunctions, &c.) the knowledge whereof is both divine, and very profitable, and being the most excellent Science in Nature, it ought to be practised by the industry of man, who is the best worke of Nature; and for that end hath God given to him an upright countenance (contrary to other terrestriall creatures) that therewith he might converse with those Cœlestiall objects, which He, for the service of man, hath placed as so many transparent Diamonds of inestimable value, in an Azure Canopie of perpetuity.

*Os homini sublime dedit Cœlumq; tueri
Jussit & erectos ad Sydera tollere vultus.*

The excellencie of Astronomy doth also appeare, in this, that it doth not onely declare unto us that there is a God, but also maketh manifest

For the Yeare, 1648.

every Christian the omnipotent excellencie
of him as a God: *Wee may understand by the
Heavens how much mightier he is that made
them, for by the greatnesse and beauty of the
creatures proportionally the maker of them is seen,
in the Booke of Wisdome, 13. 4. 5.*

Thus the apprehension of these glorious
bodies, doth evidently manifest the excellencie
and omnipotencie of their Maker, and cause
man (who beareth a greater proportion to
the Earth, then that doth to the Heavens) to
humble himselfe at the beholding of those hea-
venly lights which God hath ordained for his
use. And this was the consideration of the
Kingly Prophet David, Psal. 8. 4. 5. *When I
consider the Heavens, the works of thy fingers,
the Moon and the Stars which thou hast ordai-
ned, what is man that thou art so mindfull
of him, as to create such glorious bodies for
his service.*

And of another upon that place:

*When I pure Heaven thy fabrickes see
The Moon and Stars dispos'd by thee,
O! what is man, or his frail race
That thou shouldst such a shadow grace?*

Thus much for the excellencie of Astrono-
my

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my, now the necessity thereof may appeare by the Art of Navigation onely (though I might instance in diverse others as Geography, Cosmography, Horologiography, &c.) for without this Science, what traffique could we have with forreign Nations? what would become of that mutuall Commerce which maketh the whole World but as one Citie?

**Tis you bright Stars that are the Pilots guide
By which he safely ore the Ocean glides,
By whose industry men may trade as far
As 'tis from th' Arctick to th' Antartick Star*

Having briefly shewed the excellencie and necessity of this Art; I will now say something concerning the certainty of it, the demonstrations whereof are so infalible, as, that for the certainty of them, they may contend with truth it self, and by this also the excellencie and perfection of it may appeare; for, *no Science is perfect or excellent, that is not grounded on infalible principles.* This Science then being in it self most excellent, to man most necessary and in its principles most infalible, may move any ratiōnall man to bestow some part of his time in the contemplating of these perpetual lamps whose light doth lighten the understandings of those who converse with them.

For the Yeare, 1648.



*A brief description of the
four Seasons or Quarters of
the Yeare.*

Seeing God who is the Creator of the whole Universe, hath made a promise, *Gen. 8. 22.* That *while the earth remaineth, Seed-time and Harvest, and cold and heat, and Summer and Winter shall not cease*: It being therefore instituted (or rather ordained) by God himselfe, for the use of man, ought not to be omitted in our Annuall Prognosticks,

By the word Season (we may understand) *Quatuor Anni Cardines*, or four Quarters of the yeare, which doe not depend on the monethly revolution of the Moon, or the Suns entrance into every Signe, but of his ingresse into the four cardinall Signes of the Zodiacke which onely causes their beginning, and those Signes are *Aries, Cancer, Libra, Capricorne*, The Sun being in any of these Signes, maketh the longest day and shortest night, or the shortest day and longest night, or else the day and night of equall

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equall length, which doth not happen in
of the other Signes.

*This doth the vigour of the Signes Superior
Rule in the vertues of these things inferior.*

Of the Spring.

THe Sun beginneth now to ascend, and
tend himsele daily from the Æquinoct
towards the Artick Pole: every day
creasing in length and heat, renewing the
cayed sap in herbs and trees, clothing the
with a new garment, and pressing the branch
with hopefull buds, and now the Winter
past, the rain is changed, the flowers begin
appear on the earth, the time of the singing
birds is come, and the voyce of the turtle is heard
in the Land. Cant. 2. 11, 12.

This Season taketh beginning at that in
stant of time in which the Sun entereth in
the first minute of the vernall Æquinoctiall Signe
Aries, making the day and night of equall
length through the whole World (except
those which live directly under the Pole
which is this yeare at *London* on Tuesday
9 of *March* 33 minutes past 8 at night, and
continueth till the Sun hath made his naturall

For the Yeare, 1648.

motion through the three Northern Vernall
signes, *Aries, Taurus, Gemini*. This Quarter
is naturally hot and moist.

*The mealy mountains which were late unseen :
Change now their coats, all into fertile green ;
And Titans presence, doth again revive,
As well things sensitive as vegetiue :*

Of the Summer.

SOL having the last Season made his progresse
from the Vernall Æquinox to the Summer
Solstice, begins now to make his retrograde
motion towards the Autumnall in which he
compleateth that which before was but in
part effected, And now the yeare appeareth
like the mother of plenty, being willing to
bestow the fruits of her garment on the pain-
full husbandman, and her delectable fruits on
the hungry soule.

This Quarter taketh beginning at the Suns
entrance into the Northern Tropicall Signe
Cancer : making with us, and all those that
have North Latitude, the longest day and the
shortest night, and to those that have South
Latitude, the shortest day and longest night,
which is this yeare on Sunday the 11 of *June*

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50 minutes past 11 at night, and continued till he hath made his proper motion through the three Northern Estivall Signes *Cancer*, *Leo*, and *Virgo*, and this Quarter is naturally hot and dry.

*The reaper panting both with heat and pain,
With crooked razor, haves the tusted plain;
And the good husband that due season takes
Within a moneth his years provision makes.*

Of Autumn or Harvest.

IN the beginning of the Spring, the Sun like a bridegroom came out of his chamber, and by this time hath joyfully like a mighty Gyant run his race through the six Northern Vernall and Estivall Signes, is now returned and entred into the Autumnall Equinoctiall, and is beginning to make his Southerly journey towards the Antartick Pole, beginning *Autumne* with us, and *Spring* with our *Antipodes*, and now is time to gather in the fruits of the precedent seasons, to delight us withall in the Suns absence: for the Barnes are full, and the presses overflow with abundance of wine and oyle, and every man may refresh himselfe with the fruits of the earth, which

For the Yeare, 1648.

the providence of God he receiveth abundance.

This season beginneth at the Suns entrance into the first minute of the *Autumnall* Equinoctiall Signe *Libra*, making again the day and night of equall length, which happeneth on Tuesday the 12 of *September*, 28 minutes past two after noon, continuing, till by his daily declination, he hath moved through the three Southern *Autumnall* Signes *Libra*, *Scorpio*, and *Sagittarius*, and this Quarter is naturally cold and dry.

*Th' earth by degrees her lovely beauty bates
Pomona lodes her lap with delicates
Untill at last, trees, gardens, meads and all
Are naked stript, and quite bereft of all:*

Of Winter

THe Sun is now in his lowest condition (in respect of us) being in his *Winter* Solstice to the Northern and *Sommer* Solstice to the Southern inhabitants, but beginneth by degrees to augment the day and diminish the night, till at length he maketh them both equall. This Season hath nothing to boast of but a grey head and a white beard, the signifiers

Calculations Astronomicall,

ficators of old age, and to shew that the year is now in a declining condition, and ready to make a finall conclusion, instead of a green mantle richly embossed with fragrant flowers, is seen an argent covering of congealed water, and instead of springing brooks a christall crust.

Winter (which hath usually been placed as the first Quarter of the yeare) taketh beginning at the Suns ingresse into the Southern Tropicall Signe *Capricorn*. (making the shortest day and longest night to all that have North Latitude, and the longest day and shortest night to those that have South Latitude) which is on Munday the 11 of *December* 8 minutes past 2 in the morning, and continueth till it hath passed through the three Hyemnal Signes *Capricorne*, *Aquarius*, and *Pisces*: This Quarter is naturally cold and dry.

*The husbandman now from his labour's free,
And nothing else but snow and ice we see,
All rests in sloath, and till this quarters end,
Bacchus and Vulcan both must be our friend.*

Thus you see that the Sun by his own proper motion hath passed through the 12 Cœlesti-
all Signes, causing thereby the continuall alteration of times and seasons.

For the Yeare, 1648.

which short time his certain circuiting
Makes Winter, Summer, Autumne, & the Spring.

Of the Eclipses of the
Moon, the cause thereof, how
and when they happen.

IN regard that the Eclipse visible to us this
yeare is of the *Moon*, I shall onely speake
at this time of *Lunar* Eclipses; leaving to
speake of the *Solar*, till fitter occasion shall
offer it selfe.

Wherefore you are to note, that an Eclipse
of the *Moon*, is nothing else, but the interposition
of the earth between the bodies of the *Sun* and
Moon, they being Diametrically opposite; as
if a line drawn from the center of the *Sun*, to
the center of the *Moon*, should passe directly
through the center of the earth: which onely
happeneth at the time of the *Opposition*, or full
Moon, and not at every full *Moon* neither, but
onely when they meete in the head or taile of
the *Dragon*; which is onely the intersection of
two Circles, *viz.* the *Ecliptique*, & the *Different*,
which is the Circle that carrieth the *Moon*
about,

Calculations Astronomicall,

about, and you are likewise to note that, clock.
Eclipse of the *Moon*, appeareth to all those whose
whole Horizon the *Moon* is at the time of tran-
Opposition, though it be otherwise with aged ag-
Eclipse of the *Sun*, for a *Solar Eclipse* is no second
totall, to others partiall, and to others none. The f-
all visible, though the *Sun*, be at the time, mber
the *Conjunction* above all their Horizons, &c.

Of the Eclipses which happen this yeare.

THere will be 4 Eclipses this yeare, of
of the *Sun* and two of the *Moon*, of which
onely the second of the *Moon* will
visible in our Horizon.

The first of the *Moon*, is on the 26 day
May 11 minutes, 29 seconds, past 12 at noon.

The first of the *Sun* is on the 10 of *Jun*
38 minutes, 38 seconds, after midnight.

The second of the *Moon*, (the beginning
which will be onely visible to us) is on the 11
of *November*, the beginning whereof is
4 of the clock 44 minutes, and 18 seconds,
the morning, the middle is at 6 of the clock
31 minutes, and 5 seconds, and the end at 8

For the Yeare, 1648.

clock, 17 minutes, and 22 seconds : so that
whole duration of the Eclipse from her first
entrance into the shadow till she be fully re-
covered again, is 3 houres, 32 minutes, and
22 seconds.

The second of the *Sun*, is on the 4 of
September 21 minutes, past 9 in the morning.



*Of the Moons motion, and
the time and alteration of the
Tides caused thereby,
with a generall Ta-
ble for the finding
of them.*

The alteration of the Tides in all places
doe depend on the motion of the *Moon*,
which is twofold, the one violent from
East to West, caused by the diurnall motion
of the *Primum Mobile*, the other naturall
from West to East, which is her own proper
motion, in which she requireth 27 dayes and 8
houres to come to the place where she left the
Sun

Calculations Astronomical,

Sun the last change day : but being come to that point again, she findeth not the *Sun* there, in regard his naturall motion is every day 60 minutes Eastward, wherefore the *Moon* must performe 2 dayes, 12 houres, and 32 minutes more, before she can be in *Conjunction* with the *Sun*, so that between change and change are contained 29 dayes 12 houres and 32 minutes, (according to the *Moons* mean motion) but for ease in counting, there is 3 dayes allowed to every *Moon*, which breedeth no sensible error : Now every 24 houres the *Moon* doth depart from the *Sun* neere 48 minutes of time, and so much difference is there between tide and tide.

*The Seabath fits alternate course she keeps,
From deepe to shore, and from the shore to deepe,
Whether it were, that at the first the Ocean
By God command receiv'd this double motion,
Or whether Cynthia that with changefull law,
Commands moist bodies doth this motion cause.*

The

The names of certain Havens in and
about *ENGLAND*.

Swanborough, Southampton, Portsmouth	1
Isle of Wight, Spits, Kentish Knock.	
Rocheſter, Malden, Aberden, Redband,	2
West end of the Solowe.	
Walsend, Downs, Burney, Tenet,	3
Silly-halfe tide, Blackneſſe.	
Under St. Andrews, Liſbone, St.	4
Lucas, Bell Ile, Holy-Iſle.	
London, Cinnmouth, Hartlepool, White-	5
bay, Amſterdam, Brittain, Galizia.	
Warwick, Flamborough head, Wyndinton	6
Bay, Burdeaux.	
Warborough Quarter tide, Latzenas,	7
Sebern, Korkshaben, Dungarum.	
New-castle, Humber, Falmouth, Sally,	8
Dartmouth, Torbay, St. Malloes.	
Dimmouth, Weymouth, Hull, Lyn,	9
Dauids head, Antwerp.	
Bristol, Foulneſſe. at the Start.	10
Wylford, Bridgewater, Landſend, Water-	
ford, Abermorch.	11
Portland, Peterport, Harlew, the Hague,	
St. Wagnes ſound, Dublin, Lambay.	12
Pool, St. Hellen, Catnes, Orlney, Fatre-	
Iſles, Kildien.	13
Needles, Layſto, North and South fore	
lands.	14
Parmouth, Dover, Warwick, St. John, de	
Luce, Calice Roade.	15
Rye, Wincheſſey, Goxend, Thames,	
Rhodes.	16

A Table shewing the time of high water in Houres and Minutes.

The moons age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	16 12 48	1 33	2 18	3 3	3 48	4 33	5 18	6 3	6 48	7 33	8 18	9 3	9 48	10 33	11 18	12 3
2	17 1 36	2 21	3 6	3 51	4 36	5 21	6 6	6 51	7 36	8 21	9 6	9 51	10 36	11 21	12 6	12 51
3	18 2 24	3 9	3 54	4 39	5 24	6 9	6 54	7 39	8 24	9 9	9 54	10 39	11 24	12 9	12 54	1 39
4	19 3 12	3 57	4 42	5 27	6 12	6 57	7 42	8 27	9 12	9 57	10 42	11 27	12 12	12 57	1 42	2 27
5	20 4 00	4 45	5 30	6 15	7 00	7 45	8 30	9 15	10 00	10 45	11 30	12 15	1 00	1 45	2 30	3 15
6	21 4 48	5 33	6 18	7 3	7 48	8 33	9 18	10 3	10 48	11 33	12 18	1 3	1 48	2 33	3 18	4 3
7	22 5 36	6 21	7 6	7 51	8 36	9 21	10 6	10 51	11 36	12 21	1 6	1 51	2 36	3 21	4 6	4 51
8	23 6 24	7 9	7 54	8 39	9 24	10 9	10 54	11 39	12 24	1 9	1 54	2 39	3 24	4 9	4 54	5 39
9	24 7 12	7 57	8 42	9 27	10 12	10 57	11 42	12 27	1 12	1 57	2 42	3 27	4 12	4 57	5 42	6 27
10	25 8 00	8 45	9 30	10 15	11 00	11 45	12 30	1 15	2 00	2 45	3 30	4 15	5 00	5 45	6 30	7 15
11	26 8 48	9 33	10 18	11 3	11 48	12 33	1 18	2 3	2 48	3 33	4 18	5 3	5 48	6 33	7 18	8 3
12	27 9 36	10 21	11 6	11 51	12 36	1 21	2 6	2 51	3 36	4 21	5 6	5 51	6 36	7 21	8 6	8 51
13	28 10 24	11 9	11 54	12 39	1 24	2 9	2 54	3 39	4 24	5 9	5 54	6 39	7 24	8 9	8 54	9 39
14	29 11 12	11 57	12 42	1 27	2 12	2 57	3 42	4 27	5 12	5 57	6 42	7 27	8 12	8 57	9 42	10 27
15	30 12 00	12 45	1 30	2 15	3 00	3 45	4 30	5 15	6 00	6 45	7 30	8 15	9 00	9 45	10 30	11 15

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For the Yeare, 1648.



*The use of the two foregoing Tables
generally shewing the Tides
at any time.*

THE first of these Tables onely sheweth the names of certain Ports or Havens in and about England, with the number of the point of the Compass making full Sea, or high water in any of them; The other Table sheweth the time of high water in houres and minutes, at any of the places found in the former Table. The use of them is thus.

Seeke the place where you would know the time of high water, in the first of these Tables, and observe what figure standeth at the end of that line, where you finde the place you look for: then seeke the age of the Moon, (which you may finde in the fifth colume of each moneth) which two numbers being known, repair to the other Table, and finde the age of the Moon in the first or second colume thereof, under the Title of *The Moons age*, and the other number among the great figures in the head of the Table, and in the common angle or meeting of these two lines, you shall have the time of high water in houres and minutes.

Example.

I would know the time of high water at London Bridge on the 20 day of January this yeare, 1648: I finde the Moon on that day to be six dayes old, and the figure standing against London in the first of these

Table.

Calculations Astronomical,

Tables, is 3. Now finding 6, the Moons age, in the first colume of this Table, and 3, the number standing against *London*, in the head thereof, I guide my eye down from five in the head of the Table, till I come against 6, the Moons age, and there I finde, 7 which is 7 houres and 48 minutes, or 7 of the clock and 48 minutes past, at which time it will be high water at *London* on the 20 of *January* this yeare. In like manner, the same day at *Gravesend* it will be found to be high water 18 minutes after 6 of the clock. And in this manner may you finde the time of high water in any of the places mentioned in the first Table.

But you are to note that the Tides doe not always fall out exactly at the time found in this Table by reason of the difference of the Moons Latitude, boisterous windes, land floods, &c. which may cause them sometimes to erre from the time here found, but this is the exactest rule that can generally be given for the finding of them.

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A Table of the foure Terms

and their returns, with the Essoyne
dayes, and dayes of Exception,

Returna breuium, and
dayes of Appearance.

Return Dayes, or Dayes of Essoyne.	Dayes of Exception	Returna Breuium	Dayes of Appear.
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Hilary Term begins Jan. 24, ends Feb. 12.

Octav. Hilary.	Jan. 20	21	22	24
Quind. Hilary.	Jan. 27	28	29	31
Craft. Purif.	Feb. 3	4	5	7
Octab. Purif.	Feb. 9	10	11	12

Easter Term begins Aprill 19 ends May 15.

Quind. Pasch.	Apr. 17	17	18	19
Tres Pasch.	Apr. 24	25	26	27
Wense Pasch.	May 1	2	3	4
Quinq. Pasch.	May 8	9	10	11
Craft. Ascen.	May 12	13	15	15

Trinity Term begins June 2, ends June 21.

Craft Trin.	May 29	30	31	June 2
Octab. Trin.	June 5	6	7	8
Quind. Trin.	June 12	13	14	15
Tres Trinit.	June 19	20	21	22

Michael. Term begins Octo. 23, ends Novem. 28

Tres Mich.	Octob. 20	21	23	23
Wens. Mich.	Octo. 27	28	30	30
Craft. Anim.	Novem 3	4	6	6
Craft. Mart.	Nov. 13	14	15	16
Octab. Mart.	Nov. 18	20	20	21
Quind. Mart.	No. 27	27	28	28

A Table of the Suns Declination for the
Months of this Yeare, 1648.

Days	January		February		March		April		May	
	D	M	D	M	D	M	D	M	D	M
1	21	52	14	01	3	18	8	41	18	09
2	21	42	13	41	2	54	9	03	18	24
3	21	32	13	21	2	31	9	25	18	39
4	21	21	13	01	2	07	9	47	18	53
5	21	10	12	40	1	43	10	08	19	07
6	20	59	12	19	1	20	10	29	19	21
7	20	47	11	59	0	55	10	50	19	34
8	20	35	11	37	0	24	11	11	19	47
9	20	23	11	16	0	08	11	32	20	00
10	20	10	10	54	0	13	11	52	20	12
11	19	56	10	32	0	39	12	12	20	25
12	19	43	10	11	1	02	12	33	20	36
13	19	29	9	49	1	26	12	52	20	48
14	19	14	9	27	1	50	13	11	20	59
15	18	59	9	05	2	13	13	31	21	09
16	18	45	8	42	2	37	13	51	21	20
17	18	29	8	20	3	00	14	10	21	30
18	18	13	7	57	3	24	14	28	21	39
19	17	57	7	35	3	47	14	47	21	48
20	17	41	7	11	4	10	15	05	21	58
21	17	24	6	48	4	33	15	23	22	05
22	17	07	6	25	4	56	15	42	22	14
23	16	50	6	02	5	20	15	58	22	22
24	16	32	5	39	5	42	16	16	22	29
25	16	14	5	15	6	05	16	33	22	36
26	15	56	4	52	6	28	16	50	22	41
27	15	38	4	29	6	50	17	06	22	48
28	15	19	4	05	7	13	17	22	22	54
29	14	59	3	41	7	35	17	38	22	59
30	14	40		7	57	17	54	23	04	22
31	14	21		8	20			23	09	

the
48.

A Table of the Suns Declination for the last six
Moneths of this year, 1648.

Day	July		August		Septem.		October		Novem.		Decem.	
	D	M	D	M	D	M	D	M	D	M	D	M
09	23	06	15	08	4	19	7	20	17	43	23	10
24	21	57	14	50	3	56	7	43	18	00	23	14
39	21	49	14	31	3	33	8	05	18	16	23	18
53	21	39	14	23	3	09	8	28	18	31	23	21
07	21	30	13	54	2	46	8	50	18	47	23	24
21	21	20	13	35	2	23	9	12	19	02	23	26
34	21	10	13	16	2	00	9	34	9	16	23	28
47	10	59	12	56	1	36	9	56	9	30	23	30
00	20	48	12	36	1	13	10	18	19	44	23	31
12	20	38	12	17	0	49	10	40	19	58	23	31
25	20	25	11	56	0	26	11	01	20	11	23	31
36	20	13	11	36	0	02	11	22	20	24	23	31
48	20	01	11	16	0	21	11	44	20	36	23	30
59	19	48	10	55	0	45	12	05	20	48	23	29
09	19	35	10	34	1	08	12	20	21	00	23	27
20	19	22	10	13	1	34	12	46	21	11	23	24
30	19	08	9	52	1	55	13	05	21	22	23	22
41	18	54	9	32	2	19	13	26	21	33	23	18
51	18	40	9	09	2	4	13	47	21	43	23	14
01	18	25	8	48	3	06	14	06	21	53	23	10
11	18	11	8	26	3	30	14	26	22	02	23	06
21	17	55	8	04	3	52	14	45	22	10	23	00
31	17	40	7	42	4	17	15	04	22	19	22	55
41	17	24	7	20	4	39	15	22	22	27	22	49
51	17	08	6	58	5	01	15	41	22	34	22	42
01	16	16	5	35	5	25	16	00	22	41	22	35
11	16	35	6	13	5	48	16	18	22	48	22	28
21	16	18	5	50	6	11	16	35	22	51	22	20
31	16	01	5	27	6	34	16	53	23	00	22	12
41	15	43	5	05	6	57	17	10	23	05	22	03
51	15	26	4	42			17	27		21	54	

Some uses of the foregoing Table
of the Suns Declination.

The use of this Table is principally for Solar
Astronomicall calculations, it being generally
one of the three terms given in finding the
Suns Amplitude, Azimuth, Right Ascension,
Rising, Setting, coming to the East or West,
his Altitude at any houre of the day, and Depres-
sion at any houre of the night: This Table is like-
wise of excellent use for Sea-men, in finding the
Latitude of places, for the Meridian altitude ob-
served by Instrument, and the Declination found in
this Table will finde the Latitude of any place, by
adding them together, or subtracting them one
from another, as the Sun or place is situate in re-
spect of the Equinoctiall: Or on the contrary, the
Latitude of the place being given, and the Suns
Declination found by this Table, you may (by ob-
serving the situation of the Sun and Place) finde
the Meridian altitude of the Sun above the Hori-
zon every day in the yeare. Many are the uses that
this Table serves unto, which in this place, for
brevity and impertinence I omit, offering the Ta-
ble it selfe to every one to be employed as their seve-
rall occasions shall have need thereof, it being ex-
actly rectified for this present yeare according to the
place of the Sun in the Ecliptique.

FINIS.